## MONTHLY JOURNAL OF THE MUSHROOM GROWERS' ASSOCIATION

# MGABULLETIN

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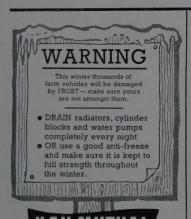
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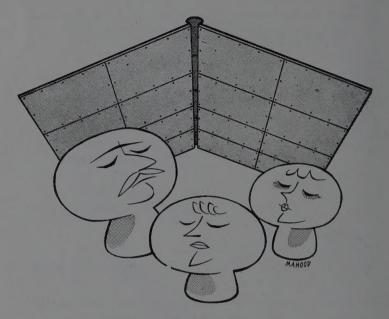
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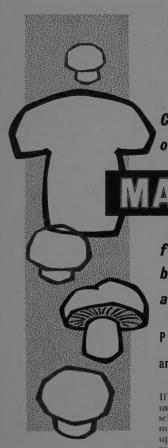
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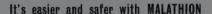
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### **EDITORIAL**

# HOUSEWIVES' CHOICE

It has long been recognised by everyone connected with the mushroom industry that one of the greatest problems yet to be overcome is that of presentation to the housewife.

Whatever we may or may not think about housewives in general it is she and she alone who has the ultimate say in what the family shall have to eat and it is she therefore who the mushroom growers must woo to the utmost if mushroom sales are to continue their steady increase.

Mushrooms, as all of us know, are notoriously bad travellers and their deterioration in the course of transit from the snow white, at the time of picking, to the very, very off-white-cum-brown, when ultimately offered to the housewife, is a problem which simply has to be overcome. Without the shadow of a doubt, once this problem is mastered and the mushroom presented to the housewife in all its pristine glory, sales will increase at a startling pace.

Already a few halting steps have been taken in an effort to bring this presentation problem to book and one hears of experiments which are going on in an effort to prevent the mushroom from deteriorating in colour and from bruising. One at least of these efforts may well be offered to the grower in a very short time—a washing process designed to protect the mushroom in transit and to increase shelf life by a day

or maybe two days.

At the moment the problem remains but without doubt, prepacks

will go part of the way to solving it.

No matter how much we may or may not decry this trend in modern shopping by the housewife, prepacks have come to stay and will, within the next few years make big steps forward.

It is useless then to ignore the clear warning which is already being given on all sides—useless to ignore the lesson which is becoming so clearly manifest in the daily shopping habits of the housewife—the insistence by them of a good, clean and well presented product. It is up to the grower, the chip maker and the prepack manufacturer to do everything possible to bring this about. Presentation and Publicity should be the MGA watchwords. WRA

# DR. KNEEBONE AT BOURNEMOUTH

Dr. Leon Kneebone's lecture, which was illustrated by slides of his own and his students' work at Pennsylvania State University and of U.S. and Canadian farms, covered the whole field of mushroom culture. He said at the outset he was not going to tell his audience how to double their production. "I cannot, and if mushroom growing becomes so simple that by following a certain fixed pattern you will get a fantastically wonderful yield, there won't be a living in it for any of us."

Dealing with composting, Dr. Kneebone said that the same principles apply for tremendous quantities or small experimental piles. Our knowledge of the composting process is still fragmentary. The object is to get the material ready for a good spawn run in the minimum period of time and with a minimum loss of the original dry weight of materials. We don't want the fire-fang to extend through the compost because the temperature eight to ten inches inside should be too hot for its growth. There is no need to worry about a compost pile ever getting too hot. The maximum amount of compost should be thermogenic to about 140 degrees F. or more. The more of the heap below that figure, the less effective composting is going on. We frequently get to 170 degrees.

Nutrition, aeration and moisture are all important. All the changes that take place in the compost are digestive and re-synthesising processes which require moisture. Without moisture there is no composting. We aim to get moisture into the material just as quickly as possible, because only when you have got moisture up to the necessary amount (250% for manure, 300% for synthetic) are you using time effectively.

From the nutritional standpoint, we have no lack of carbon in our compost. We do not need to add carbon. We must convert the original into forms of carbon more suitable for the spawn.

The trace elements needed are in our experience usually present in poultry manure and that is our most commonly used supplement. Even good horse manure is supplemented with poultry manure or other suitable materials.

The addition of large quantities of complex organic nitrogen must be limited because it has to be digested and synthesised and this takes time, thus adding to the period of composting. We add some urea, ammonium nitrate, calcium cyanimide or other materials relatively high in nitrogen which can be converted in less time. To minimise the escape of nitrogen most growers avoid leaching or collect the leachings and pump it back into the pile. We try to attain a nitrogen level in our pile, based on the dry weight of material before effective composting begins. We ensure 1½ per cent. N. in dry weight of compost before the process begins. If you don't have that much your composting is much slower and yield is less. In this connection we regard a nitrogen analysis as important because it assists us in standardising the content of the compost and if that is standardised the rest of the process can be standardised more readily. We seek to reduce the unproductive period from the beginning of composting to the beginning of picking.

If you add more N than is really necessary, you not only spend more money than is necessary but you face the prospect of a prolonged cook out to get rid of excessive ammonia.

The supply of fresh air is determined chiefly by the way you construct the piles and the density of the piles. If moisture and nutrition are right and you still have low temperature, the supply of air is probably not adequate. We want an aerobic process. Some of our big mechanical turners form a little V shaped channel in the bottom of the pile which in many circumstances does not get enough air.

At this point Dr. Kneebone was asked if anaerobic fermentation harms the pile. He answered that generally speaking what you do not do in composting must be done in the cook out. Moisture can be adjusted during cook out. Nutritional ingredients cannot be satisfactorily added after filling. One process is a continuation of the other. If you have an anaerobic core in your pile, you must correct it in the cook out.

The pile must be small enough to heat well and to restrict anaerobic fermentation.

The aim should be to concentrate on the maximum of lb. per square foot per year. The grower who requires only 6 to 7 days to properly pasteurise before spawning should always be ahead of the man who needs 2 to  $2\frac{1}{2}$  weeks. We seek to reduce the number of days in the non-productive part of the crop cycle.

In the States, a grower can send samples of his dry material and have a nitrogen test for three dollars a sample. Every opportunity should be taken to reduce guesswork.

Hay is being increasingly added to the compost. Growers with ample quantities of horse manure put in hay up to 35 per cent. It improve the stability of manure and gives a better compost. Alfalfa (lucerme), timothy and orchard grass are more satisfactory than clover.

In the States there is no commercial use of pig manure, probably because the pig production areas are not near to the main mushroom farms. "We have brought horse manure 1,000 miles, but no one has yet though of bringing pig manure 1,500 miles form Iowa".

We try to persuade U.S. growers that ventilation during pasteurisation should be as generous as possible up to the point of chilling the compost. If you have a uniform texture with no wet soggy lumps, every cubic foot will be working for itself and that is the ideal.

Answering the question: "When is the compost ready to be spawned?" Professor Kneebone said one of the least important conditions is the pH. If the ammonia has gone, the pH will be all right. If there are sections of the compost without fire-fang or heat mould, you should wait. If the heat moulds will grow, the spawn will grow. If you use synthetic compost, you have to learn that it is ready even though it appears greener and apparently less mature than horse manure. The darker the compost the better. However, colour of the compost is related to the ingredients. Sewage sludge, which does a fine job as a supplement, makes a much darker finished compost.

What should be the depth of compost? Within a mile of each other in the States there are houses with beds 10 inches deep and with beds 4 inches deep. Why does one man use  $2\frac{1}{2}$  times more material than the other? Generally speaking, I would say that if you have a really good compost, the deeper you fill the more mushrooms you will pick per unit of time, but if you give double the depths, you will not pick twice as many mushrooms. The depth of filling must be related to the ability of the grower to achieve the most economic period of picking time.

Speaking of spawn, Dr. Kneebone showed slides illustrating the amazing difference in performance even in spawns made from spores of the same mushroom. He said that it was possible for growers to select spawns to meet their particular needs. For example, farms on a 35 day pick per crop, should select a spawn to give the most mushrooms in the shortest possible time. The fastest growing spawn is not necessarily the most productive but if you have a short picking period, it is no use selecting a spawn that gives more production over a longer period. Some big farms in the States that need to produce the same quantities of mushrooms every week for the canning line arrange a combination of spawns some crop fast and others come on later but continue for longer.

Dealing with casing, Dr. Kneebone said that in new houses which the University would have ready at the beginning of next year, an experiment would be carried out on the cropping area of the bed. Parts of the surface would be covered so that it could not crop, and the quantities produced by the uncovered area would be compared with normal beds. The aim is to see whether or not it is important to have a maximum

amount of surface producing.

The depth of casing soil required depends on the type of soil. U.S. growers are given a soil analysis and a recommendation for the depth. A sandy porous soil requires more depth than a clayey loam. If you provide more casing than necessary, you give your spawn too much to do. Conversely, too little casing encourages sheeting or overlay of spawn. The peat now being used in Britain would have to be deeper than our clayey soil, to get the same pinhead response.

When to case? The sooner you case, the sooner you get mushrooms but early casing has an adverse effect on the total yield. I would advise early casing only if it is a question of hitting a particular market even

though the eventual crop may not be so heavy.

The most fascinating work we have undertaken is on the question, "Why does the pinhead form? What causes the spawn to make mushrooms"? Most of the work was done by Dr. L. C. Schisler. We grew mushrooms in a closed air tight chamber consisting of a corked three litre flask. We introduced air at a measured rate passing it through a material which first removed all moisture, then all CO<sub>2</sub> before moisture is added again. This humidified air free of CO<sub>2</sub> is passed into the growing chamber. Air is withdrawn continuously from the chamber and container. Then at intervals we take the air out. Our first discovery was that when we introduced fresh air but did not remove the air lying on the surface of the casing there was retarded growth. When we introduced air and drew

off the stale air on the surface, growth was improved. This proves that the mushroom produces respiratory gases which settle on the surface of the beds. You must remove these gases. If you don't do so, it does not matter what ventilation goes in and out of your house. The question is how much air are you moving over your producing surfaces?

This was borne out in practice in a large commercial tray plant. Air was introduced at one end of the house and we found the farther you went down the house the smaller and more spindly were the mushrooms. The ventilation was changed to ensure air movement over the surfaces

of all the trays and the crop improved.

We have also found that spawn has a fluctuating evolution of  $CO_2$  before casing. After casing you get an increase in the rate of  $CO_2$  within 48 hours. When pinheads appear, there is a tremendous increase in the amount of  $CO_2$  given off and another continuous increase as the button matures. What then is the casing doing? It used to be thought that when the mycelium came from the rich compost into the casing soil with its lower nutrient value, the change induced reproduction. We tested this. We cased with pasteurised compost which had been dried, ground and moistened. We got  $1\frac{1}{2}$  lb. per square foot on 3 inches of fill. Next we cased with absolutely pure sand. These trays were kept in moist chambers and again we got perfectly normal yields thus indicating that the exchange of the casing layer is not prerequisite to fruiting.

Well, what is the answer? We think there are growth substances produced by the mycelium and we postulate that the materials must reach a certain concentration before fruiting is possible. When these substances are diffused freely there is not fruiting. The casing

concentrates it.

If the casing permits too little diffusion there will be a restriction of

pin formation and growth.

We have run the gases from inside the bottle through various freezing combinations to separate out organic substances which are then analysed by mass spectroscopy. Early evidence supports the theory but proof is still lacking.

What are the practical implications? I do not know. We may be able to apply this material to induce earlier or more prolific pinning. It may be wishful thinking. The Glasshouse Crops Research Station

may get an answer.

# FARM WALKS RESUMED

Good attendance at Blackpool

By kind invitation of Mr. F. Bleazard, Chairman of the MGA, an area meeting and farm walk took place at The Mereside Mushroom Company's farm at Staining, near Blackpool on Friday, 17th October, where Mr. Bleazard has some 30,000 sq. ft. of mushroom beds in trays and about 3,000 sq. ft. on shelves.

Between 50 and 60 MGA members attended and listened with interest whilst Mr. Bleazard briefly described the system adopted at the farm including the peak heating and spawning in the same houses.

Composting with horse manure, to which was added  $1\frac{1}{2}$  cwt. of poultry manure and  $\frac{1}{2}$  cwt. of liquid blood per ton, took on an average 12 days.

For casing material local peat was used with ground limestone. The peat was sterilized before use. Cooking out of the houses was not carried out as the buildings themselves presented some difficulty. With regard to the empty trays, these were always cleaned between crops, dipped in Santobrite and then steamed. They were moving towards 2 lb. per sq. ft. per crop but were experiencing some trouble with mites.

A refrigerator was in use with the temperature maintained at "just under 40° F."

Tea took place later at The Imperial Hotel, Blackpool, following which Dr. N. W. Hussey, senior entomologist at the Glasshouse Crops Research Institute, Littlehampton, gave a lecture on the control of flying insects in mushroom houses (see Bulletin No. 105, p. 362).

At the GCRI he said that induced infestation had resulted in a cecid larvae population of half a million per sq. ft. "and we still produced quite a satisfactory crop of mushrooms".

He was firmly convinced that many farm pest problems were often local—Mr. Bleazard's mite problem could be a case in point—and it might well be necessary to adopt special methods of control which would not be usual on the average farm. "I think" said Dr. Hussey, "that98% of your crops have cecids, whether you know it or not. Few if any survive adequate peak heat although cecids would get into wood to perhaps a depth of half an inch and in those circumstances some might well continue to live". He added that, with mushroom production the ideal surroundings were provided for reproduction and everything could reproduce without any bother at all.

Speaking of the new spawning machine shown at Bournemouth, Dr. Hussey said in his opinion it was of even greater value because it spawned in depth.

Commenting on the fly population of houses and the likelihood of each fly carrying eggs, Dr. Hussey said that out of a count of 789 Phorids only one was found to be carrying eggs. Sciarids, he said, were great mite carriers, so heavily laden sometimes "that it is a wonder they can even take off" (laughter).

He urged the need for control to be established before the pinhead stage was reached and added the flies had got to be kept out of the growing houses either by forced ventilation or by other means.

Dr. Hussey was warmly thanked by Mr. Bleazard.

A film of mushroom growing and packing in America created a great deal of interest.

At a short meeting which followed Mr. R. G. Martland and Mr. T. Orritt were appointed to the Area Committee, with Mr. Bleazard, after it had been explained that it was important for such a committee to maintain a direct link with the Executive Committee.

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The Executive Committee of the MGA have unanimously agreed to a recommendation from the Publicity Sub Committee that the increased spawn levy contributions, agreed to in principle at the last Annual General Meeting, should be at the flat rate of 6d, per carton and not 10% as was originally suggested.

This slight change was decided on when it was realised that a percentage scheme could conceivably operate in favour of larger growers who, buying in large quantities, are able to negotiate more favourable

It was also unanimously agreed at the last meeting of the Executive that no single firm should be expected to contribute more than £2,000 per year to the MGA Publicity Fund. Mr. J. A. Linfield of Messrs. A. G. Linfield Ltd., said his firm would, he thought, reach the top level of £2,000 in the coming year. He added "Our spawning rate in any case is far heavier than the average". Mr. Linfield is a member of the MGA Executive.

This scheme for increased publicity contributions got under way this month—the beginning of the MGA financial year—and it is hoped, by the end of October next year, that the sum of about £8,000 will have been raised. Of this £4,000 has already been earmarked for a mushroom publicity television series from the Birmingham studios, timed to coincide with that time of the year when mushroom prices tend to reach their lowest-June, July and August.

As a survey to be published in the December issue clearly shows, greengrocers everywhere are crying out for "point of sale" publicity and this is an aspect of publicity which is also receiving close attention.

The list of Publicity Subscribers is published herewith as a permanent record for the spawn merchants—a further list will be published next month, as completed Authorisation Forms are still coming in.

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Danson, E., 2 Beacon Oak Road, Tenterden.

Dredge, Major A. L. A., Combe House, Combe Bank, Sundridge. Field, Lt.-Col. N. J. L., Fair Acres, White Hill, Bilting, Nr. Ashford. Gook, E. A., Hegdale Cottage, Boundgate, Badlesmere, Nr. Faversham.

Gook, E. A., Hegdate Cottage, Boundgate, Badlesmere, Nr. Faversha Jackson, R. L. O., Cedar Cottage, Broadoak, Canterbury, Smith, E. N., Plantation House, Rhode Common, Faversham. Smith, G. C., Loddington Farm Ltd., Linton, Maidstone. Stanford-Tuck, Mrs. J., The Lynch, Eastry. Stedall, G. St. G., Shearway Nurseries, Cherry Gardens, Folkestone. Turpin, D. F., Tutty's Farm, Matfield. Vyse, W. J., Foxden Lodge, Egerton, Nr. Ashford. LANCASHIRE

Aspin, J., 15 Old Field Carr Lane, Hardhorn, Poulton-Le-Fylde.
Beardsell, D. R., 6 Cable Street, Formby, Liverpool.
Bleazard, F., Messrs. C. Bleazard & Son Ltd., Cornwall Place, Blackpool.
Bleazard, J. A., Messrs. Mereside Mushroom Co., 21 Cornwall Place, Blackpool. Bradley, K. C., Lodge Lane Nurseries, Lytham.
Coates, Fred., Rivelin Nurseries, Course Lane, Newburgh, Wigan.
Conroy, P. J. Ltd., Hope Street, Wigan.
Hunt, John, Torr's Farm, Walmer Bridge, Nr. Preston.
Ibbotson, D. R., 41 Station Road, Hesketh Bank, Nr. Preston.

Lawton, R., Messrs. Lawton Bros., Oulderhill Nurseries, Taunton Ave., Rochdale. Lewis, David J., Anfield Lodge, 13 Anfield Road, Anfield, Liverpool 4.

Martland, R. G., Burscough Bridge, Ormskirk. Rothwell, J. & Son, Little Hall Farm, Cottage Lane, Ormskirk. Watson, H., Rowe Farm, King's Causeway, Breffield, Nr. Nelson.

LEICESTERSHIRE

Marigold Nurseries Ltd., Great Bowden, Market Harborough.

Paragreen Garden Constructions Ltd., Gimson Road, Leicester.

LINCOLNSHIRE

Saul, T. A., Ltd., 66 Seacroft Esp., Skegness.

Titley, Bros., Ludford, Lincoln.

LONDON

Bermondsey Mushroom Partnership, 18-26 and 30-42 Maltby Street, S.E.I. Knight, L., Brooklyn, Sewardstone, Chingford, E.4.

MIDDLESEX

Berry, A. J., The Dell Mushroom Farm, Reservoir Road, Ruislip Common. McGladdery, N., Messrs. N. & A. W. McGladdery, Old Mill House, Old Mill Lane,

Cowley.
Palfrey, E., 32 Manor Park Gardens, Edgware.
Taylor, R., 59 Waldegrave Park, Twickenham.
NORFOLK

Britton, Major B. G., The Rookery House, Mundesley.

Broadlands Mushroom Farm, White Street, Martham, Great Yarmouth.

NORTHAMPTONSHIRE

Atkins, F. C., Noble Mushrooms Ltd., Yaxley, Peterborough.

Brown, H. A., Avalon, Peterborough Road, Farcet, Peterborough.

Day, J. E., Lowick, Nr. Kettering.
Garrow, J. P., The Barn, 8 High Street, Roade.
Luxmore, M. C., Snowcap Mushrooms Ltd., Yaxley, Peterborough.
Terrell, F., The Grange, Yaxley, Peterborough.

NORTHERN IRELAND

Forsythe, W. J. & Son Ltd., Fairview Nurseries, Bangor, Co. Down.

Kernohan, S. H., Lower Broughshane, Ballymena. McBriar, R. J., Overdale, Saintfield, Belfast. Nelson, R. G., Ballylumin, Ahoghill, Co. Antrim.

Patterson, Robert, Monlough Food Production Co. Ltd., Ballygowan, Belfast.

Taylor, Robert, Rex Products Ltd., Temple Patrick, Belfast. Young, Mrs. M. B., Mountsandel, Coleraine, Co. Londonderry.

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NOTTINGHAMSHIRE

Bentley, A. J., Ltd., Frearson Farm, New Eastwood, Nr. Nottingham. Cwynar, S., Bestwood Park, Bulwell, Nottingham. Kublicki, S., Old Estate House, Wollaton, Nottingham.

Lichtarowicz, Col. L., Mapperley Mushroom Farm, 7 Mapperley Park Drive, Nottingham.

**OXFORDSHIRE** 

Vranesevic, B., Field Place Farm, Henley-on-Thames, Oxon.

RUTLAND

Edwards, R. L., Dr., Ratcliffe Lodge, South Luffenham, Oakham. SCOTLAND

Allsop, H. S., Kingsley, Fennwick Road, Kilmaurs, Ayrshire. Beveridge, John & Co. Ltd., Bridgend, Kinross. Dumbreck, R. D., Mossgiel, Dysart, Fife. Galbraith, W. S., Albethy, Bridge of Allan, Stirlingshire. Melville, A. Campbell, Fala, Errol, Perthshire.

Oliver, A. P., The Mushroom Sheds, Buckholme Mill, Galashiels. SOMERSET

Griffiths, G., Wrington Vale Nurseries, Congresbury. Lloyd, J. H., Shrub Farm, Brent Knoll, Nr. Highbridge. STAFFORDSHIRE

Brammer, J. D., Wood Farm, Bagnall, Stoke-on-Trent.

Homer, C. H., 139 Waterfall Lane, Blackheath.

SUFFOLK

Piatkowski, Capt. S., Town Pightle, Dunwich Lane, Peasenhall, Saxmundham.

Thomas, L. S., Gt. Welnetham, Bury St. Edmunds.

SURREY

Baker, G. W., Broadham Produce Co. Ltd., Station Road, Oxted.

Baker, G. W., Broadham Produce Co. Ltd., Station Road, Oxted. Batchelor, J. G., Borrow House, Churt. Blacker, C. B., 2 Firgrove Hall, Farnham. Bowles, Dr. V. H., Brightleigh Farmhouse, Outwood, Nr. Redhill. Chapman, H. B., Newstead Hall, Horley. Dalton, D. N., Leigh Mill House, Godstone. Griffin, G. D., Valley Mushroom Farm, Tatsfield. Heather Farm Ltd., Horsell Common, Woking. Jones, A. D., "Hythings," Station Road East, Oxted. Millais, E. G., Crosswater Farm, Churt. Reed, Guy, Riverdale Mushroom Farm, Send Road, Old Woking. Rudkin, T. J., Highfields Nurseries, Big Common Lane, Bletchingley. Shackleford Nurseries Ltd., Eashing, Nr. Godalming. Sparling, T. A. G., Bridges Wood, Burstow, Nr. Horley. Tomlinscote Farm, Chobham Road, Frimley, Camberley. Wade, B. W., Chellows Park, Crowhurst, Lingfield. SUSSEX

SUSSEX

Adams, A. E., Sunnybank, West End, Henfield. Barton, H. F., Winterpick Nurseries, Church Lane, Plummers Plain, Horsham.

Bulloch, McGregor, The Cottage, New Road, Littlehampton. Curry, Lt.-Col. A. R., Rest Harrow Farm, West Chiltington.

Dowmunt, T. M., Holly Grove, Newick. Filmer, F. L., Little Walstead Farm, Lindfield. Grant, G. F. B., Church House, Washington, Pulborough. Hopkins, R. J., Hammer Lane Farm, Vines Cross, Horam. Jarvis, M. C., Culberry Nursery Ltd., Dappers Lane, Angmering.

Jupp, J. S., Bridge Nurseries, Coldwaltham, Pulborough.

Kessler, J. L., Dingley Nurseries, Rustington. Kirtlan, A. M., Sompting Nurseries, West Street, Sompting, Worthing.

Kritlan, A. M., Sompting Nurseries, West Street, Sompting, Worthing. Knaggs, F. B., Chantryfield Nurseries, Arundel Road, Angmering. Laing, R. G., Seven Acres Nursery, Arundel Road, North Angmering. Leeney, A. G., Apple Tree Cottage, 46 Poulters Lane, Worthing. Levett-Fuller, J., "Treesmill," West End, Peasmarsh. McBride, P. S., Tubwell Nurseries, Maynards Green, Horam. McLellan, Col. M., Ellwood Mushroom Farm, Rotherfield. Sall, E. F., Clymping Mushrooms Ltd., Littlehampton.

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# INTERNATIONAL PREPACKAGING EXHIBITION ROYAL HORTICULTURAL SOCIETY HALL WESTMINSTER

By Major A. L. A. DREDGE.

Some four months ago the Publicity Committee of the MGA decided to take a stand at this Exhibition. It had been suggested that the MGA should be represented at both the Royal Show, Bristol and the International Exhibition, but the Committee considered that there were only sufficient funds to put up one exhibit and the choice fell on London, particularly as the Exhibition was international and the first of its kind ever to be held.

Since my wife and I had put up the exhibit which won the P.P.D.A. award of merit at the Royal Show last year, it was agreed that we should stage this show.

On Monday evening, 6th October, the growing trays had been put in position and the outside of the "house" arranged. Some 20 lb. of pre-packed mushrooms were left inside the "house". We went off quite happily to bed in a nearby hotel that night and returned at 7 a.m. (next morning) to complete the exhibit. To our horror we discovered that no less than 12½ lb. of exhibition prepacked mushrooms had been stolen during the night, together with several fairly valuable tools. This was immediately reported to the police through the organisers of the exhibition—the Produce Pre-packaging Development Association Ltd. Later in the afternoon, a C.I.D. inspector obtained full particulars from me with the idea of tracing nine of the prepacks including five

which had been flown over from Ireland and four from Greenacre Farm: these should have been fairly easy to discover as we knew that none were on the market in London that day.

We also found that the fascia had the words "Mushroom Growers Ltd." pasted up. I managed to get the "Ltd." removed before the show started, but unfortunately no-one had the extra letters for "Association".

Reverting to the Exhibition, we borrowed some Hartmann  $\frac{1}{4}$  lb. packs from their stand as we had supplied them on the previous day and with a little re-arrangement managed to put up a reasonable display on the two tables.

The photo shows the exhibit, taken on the second day, by which time we had obtained replacements for all the prepacks. The growing mushrooms were supplied by Heather Farm, Horsell Common, Woking, on trays kindly provided by Broadham Produce Company of Oxted.

The design of the miniature mushroom "house" was undertaken by Combe Bank Market Gardens Ltd. of Sundridge. On the display tables can be seen complete trays of ½ lb. cartons supplied by Bowater-Eburite Ltd. in the normal outer container in which they are marketed. Other prepacks include those supplied by Combe Bank Market Gardens Ltd., Greenacre (green) cartons, Messrs. Monlough of Belfast ¼ lb. punnets and the blue "Noble" prepack. There were also a dozen ¼ lb. Hartmann trays which are over-wrapped with cellulose acetate supplied by British Celanese. Readers may also be able to see two ½ lb. bags of stalks pinned to the outer walls of the mushroom "house".

Great interest was shown in the mushroom "house" and it is believed that this is the largest quantity of growing mushrooms that has ever been shown at any exhibition in London. As usual a fairly large percentage of visitors enquired how to grow mushrooms. They were politely told that they should either join the MGA or purchase one of the well-known books on growing which were on sale at the Commercial Grower's stand at the end of the hall. On the other hand a considerable number of growers, including our Chairman, visited the Show and several went away determined to start pre-packing. There were a large number of retailers and wholesalers, particularly from the North, many of whom asked where they could obtain prepacked mushrooms. They were referred to the nearest prepacking farm or, if they happened to hail from a county far away from a prepacker, it was suggested that they should get in touch with the nearest grower-member.

A well-known leader of the Birmingham wholesale market told me that he had tried prepacked mushrooms in that city four years ago, but had met with very little response. Later on the same day an equally venerable gentleman from the same trade and town stated very definitely that he was going to move with the times and start selling prepacks as soon as he could. Naturally I told him to approach Noble Mushrooms at Yaxley.

**Publicity** 

During the Exhibition some 8,000 people, including visitors from at least twenty countries, came to the Show and judging by the crowds outside our exhibit, I think most of them must have visited Stand 66. On at least two occasions we had to call on the P.P.D.A. interpreter service to answer complicated questions from foreign visitors on growing and prepacking. The exhibit was televised by the B.B.C. and appeared in the news: it was also mentioned on the B.B.C. and the Archers included it in their daily programme.

At least two papers, the Fruit Trades' Journal and the Grower and Prepacker, published the story of the theft on the night of 6th/7th October.

P.P.D.A. gave a prominent place, at the entrance, to the standard  $\frac{1}{2}$  lb. blue prepacks presented to them by the MGA. Our prepacks were also on view at several stands, including those of British Celanese Ltd., Hartmann Fibre Company and Bowater-Eburite. A great deal of Publicity literature was also distributed.

I have often been asked why we prepack mushrooms when there is a steady and constant demand by wholesalers and retailers for the standard chips. The main reason is that prepacks finish up in the food departments of large stores or self-service stores where they are exceptionally well displayed and often reach the customer who does not normally buy mushrooms. This, of course, takes off a certain quantity from the normal wholesale markets and therefore benefits all growers and not only the prepackers. Apart from our own stand, the standard of exhibits was exceptionally high and the hall presented a very polished appearance. I feel quite sure that no grower will feel that his contribution to the publicity fund was unwisely spent. In fact, in the words of our Chairman at a recent meeting, "This was the type of exhibition which we could not afford to miss".

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# MUSHROOMS ON TELEVISION

MGA Chairman and Sussex Grower on Programme

Mr. F. Bleazard of Blackpool, MGA Chairman, appeared with Mr. J. L. Kessler of Rustington, Sussex, on Southern T.V. on the eve (30th September) of the Bournemouth Conference and Exhibition, on a programme dealing with mushroom growing and, in addition to giving first-hand information on the state of the industry to-day they were both able to give extremely valuable publicity to the cultivated mushroom.

The programme was opened by Mr. A. G. Street, the well-known author, farmer, broadcaster and television personality, who began by commenting on the disastrous position with regard to this year's general farm harvest. A farmer then gave his views on the general position.

Turning to horticulture, a film was shown of a large mushroom farm in Sussex (Messrs. A. G. Linfield Ltd., Thakeham) with a commentary by Mr. Keighley, Horticultural Officer to the West Sussex Agricultural Executive Committee.

In the subsequent discussion Mr. Bleazard and Mr. Kessler were asked their views on the position of the mushroom grower in view of the inception of such large scale growing. Mr. Bleazard said the film demonstrated that mushroom growing was becoming big business but he did not feel that the larger growers were unduly concerned as competition within the industry had been expected. In any case it was up to each grower to meet the situation by increased efficiency and by marketing as attractive a product as possible. Mr. Bleazard has a basic area of around 50,000 sq. ft.

Mr. Kessler, with 12,000 sq. ft., said he thought the smaller growers were alarmed at the general trend and that the position might have to be met by co-operative action between small growers in order to reduce costs. He suggested centralised composting and marketing. Mr. Bleazard did not altogether agree with this and pointed out that growers might well prefer to keep compost under their own direct control.

Mr. Street suggested that wild mushrooms had a better flavour than the cultivated variety but Mr. Bleazard and Mr. Kessler pointed out that the flavour depended on the strain of mushroom and the maturity, as in so many other things.

The discussion then turned to the economics of mushroom growing and to the possibility of many ex-Army officers, etc., taking up mushroom growing. Mr. Kessler said he thought a mushroom farm would take about 10/- per sq. ft. to build but Mr. Bleazard said it could only be done at such a low figure if the proprietor did all the work himself and did not reckon his own time. If an outside contractor was employed Mr. Bleazard estimated that the cost per sq. ft. would exceed £1 and Mr. Kessler agreed that he had not included equipment in his figure of 10/-.

The discussion concluded, after being on the air for about six minutes, with Mr. Bleazard saying that growers would have to stimulate demand by increased publicity in order to absorb increased production. He said that mushrooms made many dishes more attractive by their addition and that they were ideal too as a main course for the ladies, in view of the low carbohydrate content of the mushroom and, therefore, their slimming properties. Mr. Street, in his final comment added that, in view of what Mr. Bleazard had just said, he himself would have to eat more and more mushrooms!

## DR. KNEEBONE SAYS "THANK YOU!"

I welcome this opportunity to thank your organization and each of you personally for your part in making my ten-day visit to England so memorable for me. Your generosity and many kindnesses enabled me to experience a most enjoyable and educational visit.

I hope I may have the privilege of reciprocating when you visit the Pennsylvania State University and the mushroom industry of America.

Leon R. Kneebone,

# PUBLICITY FLASH

When Mr. G. W. Baker of Oxted, Surrey, visited the Norwich Market last month, accompanied by Mrs. Baker and your Editor, he was pleasantly surprised to find that mushrooms were prominently displayed on nearly every one of the many fruit and vegetable stalls in the market. The only stallholder he questioned on the subject of mushrooms said, "I have to increase my order every week because sales rise steadily. I always tell my customers that there is no need to peel cultivated mushrooms".

# SUBSCRIBERS

Continued from page 433

### SUSSEX (Cont'd.)

Sampson Mushrooms Ltd., Rushmans Nursery, Oving, Nr. Chichester. Seymour & Girling Ltd., Rushinans Nursery, Oving, Nr. Chichester. Seymour & Girling Ltd., Angmering Nurseries, E. Preston, Littlehampton. Sharp, W. E., The Nook Nursery, 92 Cokeham Lane, Sompting, Lancing. Stay, D. F., Littlewood Farm, Singleton, Chichester. Stevens, Flt./Lieut. J. E., Brook House, East Grinstead. Thompson, R., Church Farm House, East Wittering, Chichester. Tyrrell, J. W. H., Sparkes Nursery, Walberton, Arundel. Ulm, J., Cupressus Nurseries, Washington, Pulborough.

Moyland, Baron Van, Panty-Goitre, Abergavenny.

### WARWICKSHIRE

Cooper, N. R., Shadowlawn Products, Kimcote, Rugby. Powell, C. V., 98 Solihull Road, Shirley, Solihull.

### WORCESTERSHIRE

Fieldking Mushrooms, Summerdyne Farm, Bewdley. Phipps, J. D. B., Broad Close, Broadway.

YORKSHIRE

Appleyard, W., Windycroft, York Road, Whinmoor, Leeds 14.

Atkinson, W. S., Blackgates Farm, Tingley, Nr. Wakefield.

Bardsley, F. M., Low Mill, East Ayton, Scarborough.

Barraclough, H., Westerton Farm, West Ardsley, Wakefield.

Broomhead, R., Beckwith Knowle Gardens, Otley Road, Harrogate.

Dalton, Alan, Folly Hall Farm, Outwood, Nr. Wakefield.

Denton Park Gardens, Denton, Ben Rhydding, Nr. Ilkley.

Gill, D. B., Canal Produce Co. Ltd., Canal Road, Selby.

Goldthorpe, H. V., "Rockleigh," Station Road, Shepley, Huddersfield.

Green, G. W., Whitegates, Ferriby High Road, North Ferriby.

Greenhill Nurseries Ltd., Hill End Road, Leeds 12.

Hardwick, G., Crimple Cottage, Kingscliffe, Wisden, Nr. Bradford.

Middlesbrook, S., Highfield House, Brayton, Selby.

Preston Nurseries, Weghill Road, Preston, Hull.

Smith, T. A., c/o G. W. Smith & Sons, Thorpe Lane Farm, Thorpe, Nr. Wakefield.

Soutter, J. Stewart, The Hedon Growers Ltd., Souttergate, Hedon, Nr. Hull.

Stone, Major G. F., Kirby Misperton Hall Nurseries, Malton.

Thorne, Philip R., Greenways, Weston, Selby.

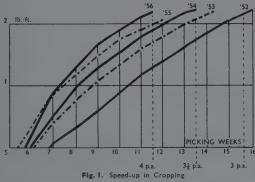
Weatherall, Lt.-Col. N. E., Sandford House, Richmond.

Winder, Dr. N. F., Eltofts House, Carl Lane, Thorner, Nr. Leeds.

# MAJOR PROBLEMS IN PRODUCTION AND MERCHANDISING FACED BY GROWERS IN GREAT BRITAIN

By FRED. C. ATKINS

Shortly before I left England I saw an advertisement headed "Keep Fit By Breathing" which seemed succinctly to summarise the basic problems facing us in Britain to-day. Consider, in the mushroom context, what it said: "The way you use your lungs controls your health, your resistance to disease, even your time span. If breathing is difficult, your joy in living is so much less . . . . . ."



The pace of mushroom growing has been accelerating steadily for some years. It would not be unfair to say that few growers know why or how this has happened, but most of us, including myself, have been slow to realise that, the faster the mushroom grows, the more air it needs

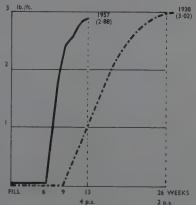
and the heavier the concentration of metabolic by-products to be removed.

Giving the mushrooms no more air than they had in more leisurely times has affected their "health, resistance to disease, even their time

span". We are now introducing more air, but are up against the problems of how much, how fast and when, and the inter-related complications created by temperature and humidity.

As almost the only grower among such a galaxy of crudite speakers, perhaps I should satisfy them and you on my basic premises. I have plotted the average production line of each of the years1952-56 (Fig.1). More or less the same yield is obtained, but the time taken is contracting all the time. The data are based on my records of Noble Mushrooms Ltd.

The change in pattern is even more noticeable when our best



more noticeable when our best Fig. 2. Speed-up in Cropping and coming into Crop

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MOST OF THOSE ATTENDING TH

crop just before the War is compared with our best crop 20 years later (Fig 2). The yield is roughly the same but, whereas in 1938 it was achieved in 184 days from filling to emptying, in 1957 it occupied only 88 days. We used to put down two crops a year; now we put down four. The period from filling to coming into crop has been reduced by one-third, and the economic cropping period has been cut by two-thirds.

This speed-up is not intentional. We growers would obviously prefer the duration to remain constant and the yield to go up. Perhaps a clue is given by a graph which compares the yields from one batch of compost divided between two houses with different air: bed ratios; no fan was used in either house. Where the ratio was 4:1 the crop was spent in six weeks; where it was 6:1 the house was still cropping economically after nine weeks (Fig. 3).





COURSE ARE PICTURED HERE



This could have been foreseen eight years ago, when Noble Mushrooms averaged 3 lb./ft. on shelves with an air: bed ratio of 5:1. In 1950 we slipped in an extra shelf on each side, reducing the ratio to just below 4:1. It pained our vanity that our yield fell to  $2\frac{1}{2}$  lb./ft., but it was more profitable to grow  $2\frac{1}{2}$  on either shelves in a given house than 3 lb. on six shelves. So far we have failed to regain that 3 lb. average on eight shelves.

In fact, only recently have we started a serious study of the air requirement of the mushroom, and it is unlikely that I can contribute anything

to what you already know.

Undoubtedly a major fault in my make-up, though not peculiar to me, is that I am always chasing too many hares at once. Stephen Leacock may well have had mushroom growers in mind when he referred to the fellow who "flung himself upon his horse and rode madly off in all directions...."

I was recently disturbed by the increasing incidence at Yaxley of Mat Disease. I recalled reading some years ago in the Transactions of the British Mycological Society of a spore trap devised by J. M. Hirst, of Rothamsted. This is a power-operated suction trap in which spores are impacted on the sticky surface of a slowly moving slide, enabling an accurate estimate to be made of the concentration of different kinds of spore in the air at any given time. Hirst came over to Yaxley to discuss the problem, accompanied by members of the Agricultural Advisory Service, among them being G. H. Brenchley, the Cambridge plant pathologist.

As a result of that visit the spore trap was set up in an empty house after it had been thoroughly cleaned. The house was filled two days later, peak heated, and opened up for cool-down. Brenchley reported: "There was practically nothing from the beginning until the house was opened. Then *Myceliophthora* spores began to come in in some quantity, reaching maximum at about midnight". The obvious deduction was that cool-down was the danger period.



The next step, short of complete and costly air-conditioning, was to attempt to clean the incoming air at cool-down. I was fortunate at this moment to hear of a portable air-sterilizer which was on test in hospital operating theatres. The principle is simply a primary filter, a fan, ultra violet light and a secondary filter. These are not even yet on the market, but I was able to persuade the manufacturers to lend me two.

In the first experiment there was much Mat in the control house, almost none in the test house. I then tried to eliminate Mat altogether from the test house by ventilating through the sterilizers from

cool-down until the beds were cased. There was no Mat at all in the test house; but there was none in the control house either! But there was an early and severe attack of Cecid larvae in the control house, and none in the test house until almost the end of the crop. Further trials are in progress.

I am interested in the probable tie-up of these air sterilizers with the problem I mentioned earlier of air intake and movement. Apart from the considerable increase in yields when, by chance or design, everything is just right, the general failure to provide enough air (but not too much) at the right moments, at the right speed, temperature and humidity, has led in the past year or two to an upsurge of disorders variously

diagnosed or at least described as Brown Disease, Watery Stipe and La France Disease. I am not alone in believing that (a) one or more infective agents exist, and (b) the climate in the house and in the bed has a profound influence on the development of these disorders. Little-hampton is concentrating on "the La France complex", as we now refer to it, and infection studies by Miss D. G. Gandy are running parallel with comparative trials by P. B. Flegg in a series of small cabinets providing different climates.

We are fortunate, too, in that the new mushroom houses at Little-hampton are designed to provide a pre-determined environment, and experiments are being planned in collaboration with our National Institute of Agricultural Engineering, whose work on the airconditioning of glasshouses is well-known.

At a scientific conference on this problem which I attended I was intrigued to hear a plant breeder suggest that the disorder might have a strong genetic component. He stressed the fact that a mushroom, whether normal or abnormal, resulted from the interaction of its genetic determinants with the environment. This was rather beyond my lay grasp, but it revealed to me once again how shaky are the foundations of our industry.

In my capacity as President of the International Commission on Mushroom Science I have been approached by research workers in several European countries with the suggestion that an international research centre for spawns be established. I made a tentative and informal appeal to some of the spawn makers known to me personally. It is a sign of my increasing age and decreasing energy that I was promptly deterred from pursuing this exciting prospect by the protest of one that he was already spending a large sum of money on his own research, the announcement by another that there was little hope of further improvement in spawn strains, and the complete rejection of the idea by all.

Although it may not be in the interests of spawn makers to finance jointly a programme of fundamental research on a scale greater than their individual turnover and resources would warrant, I am much more concerned with the interests of the growers.

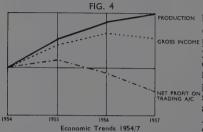
Many confidences are reposed in me, and I can say little of what is worrying me in the spawn field. But perhaps I might be allowed to tell you that research on *Coprinus* (Ink Caps) has just revealed a bacterial contaminant causing lysis of the mycelium. Whether or not the spawn makers are aware of this, they do know that disappearance of the mycelium is often a characteristic of La France Disease, and that when the spawn dies the mushrooms fed by it will die.

Perhaps I might add that I expect to hear something at the Copenhagen Conference next year about Open Veil or Gill-less Mushrooms. And again we may find clues in current work on other Basidiomycetes.

Much in our minds to-day are Cecids and Phorids and, perhaps to a less degree at the moment, Nematodes. I have nothing to say

beyond reporting that an exhaustive study of the two former pests is now being made at the Littlehampton Institute by N. W. Hussey and I. J. Wyatt.

I have left myself little time to discuss our merchandising problems. This is not wholly unintentional, for we are in general very far behind you in this field. We have largely ignored the interesting subject of quality control and, perhaps because of this, we retain a strong antipathy to grading our produce; only in the London wholesale markets is it absolutely essential to grade.



For 20 years my plant has been offering pre-packed window cartons, initially one-ground but for the past five years half-pound, with such a discouraging response that I feel convinced that pre-packed mushrooms must sideness the wholesale markets and go direct to the shops.

A promising move was the setting-up recently of grower-

controlled companies to receive and distribute members' pre-packs to retailers.

By and large, however, I do not think I am exaggerating if I say that we are still selling our mushrooms just as we did 20 years ago, in 2 lb. and  $2\frac{1}{2}$  lb. baskets through orthodox wholesale channels. And we have done no market research at all comparable with yours.

Perhaps the fault lies in our having had a run of high prices which has lulled us into complacency. But all the time, inexorably, our costs have been creeping up until now, with the profit margin dangerously narrow, prices have suddenly resumed their downward trend. We are distinctly worried (Fig. 4).





For Example
Ford Consul 1508 c.c. 1955 Value £550.
District 'A' comprehensive.
Present rate £20.15.0. NFU Mutual £17.15.0.
Austin 11.9 h.p. 1946, Value £250.
District 'A' comprehensive.
Present rate £16.7.0. NFU Mutual £13.7.0

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NATIONAL FARMERS UNION MUTUAL INSURANCE SOCIETY LTD. Head Office: STRATFORD-ON-AVON

# 1958 DURIICITU EUND CANTDIRUTADO

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Geo. Jackson & Co. Ltd., Smithfield Market, Birmingham J. Stratton Ltd., Spitalfields Market, London, S.E.1. T. J. Poupart Ltd., Covent Garden, London, W.C. Francis Nicholls Ltd., Smithfield Market, Birmingham Reuben Levy Ltd., 88 Spitalfields Market, London, S.E.1 C. W. Tooley & Son Ltd., Nottingham Mm. Morgan & Co. Ltd., Custom House Street, Cardiff Jackson & Lakin Ltd., Nottingham R. E. Jenkinson Ltd., Covent Garden Market, W.C.2 C. Snowdon & Co. Ltd., Castlefolds Market, Sheffield Dan Wuille & Co. Ltd., Covent Garden Market, W.C.2. Ernest White Ltd., Kirkgate Market, Leeds Ed. H. Lewis & Sons Ltd., Covent Garden Market, W.C.2 A. Williamson (19) Ltd., Smithfield Market, Birmingham C. Snowdon & Co. Ltd., Castlefolds Market, Sheffield P. & T. Fitzpatrick, 22 Queen Square, Liverpool 1 James Blackburn (Manchester) Ltd., Smithfield Market, Manchester G. E. Leatherland Ltd., St. Andrew's Street, Newcastle-on-Tyne Herbert Hitchcock & Son Ltd., Boro' Market, S.E.1 J. Collingridge Ltd., Covent Garden Market, W.C.2	2 10 5 105 15 75 5 5 5 5 20 5 10 58 5	0 10 13 2 10 3 0 9 0 0 5 5 14 5 10 7 1	0 0 0 0 0 0 0 3 0 0 8 0 7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
*Spawn Merchants:—  Monlough Food Production Co. Ltd., Ballygowan, Belfast. S. A. F. Sampson Ltd., Oving, Chichester, Sussex. Pinkerton's Scottish Mushroom Laboratories, Millerston, Glasgow. H. Mount & Sons Ltd., Littlebourne, Canterbury, Kent. W. Darlington & Sons Ltd., Southcourt Road, Worthing, Sussex. Geo. Monro Ltd., Hertford Road, Waltham Cross, Herts.  *Amounts collected by spawn merchants are not for publication.			
Sundriesmen:—	£	S. (	d.

Shirley Organics Ltd., Vicarage Wharf, Battersea, S.W.11 (activators) D. C. Bushell & Co. Ltd., Sandhurst, Camberley, Surrey (manure 25 0 0

10 10 Thos. Elliott Ltd., Eagle Mills, New Church Road, S.E.5 (manure, 40 0 10 10 0

# LAST MONTH'S PUBLICITY CONTRIBUTIONS

\*Spawn Merchants:---

\*Monlough Food Production Co. Ltd., Ballygowan, Belfast. Godson & Mallard Ltd., Ferringham Lane, Ferring, Sussex. \*W. Darlington & Sons Ltd., Southcourt Road, Worthing, Sussex. †S. A. F. Sampson Ltd., Oving, Chichester, Sussex.

Salesmen:---£ s. d. †Jackson & Lakin Ltd., Wholesale Fruit Market, Nottingham 3 19 11 †C. Snowdon & Co. Ltd., Castlefolds Market, Sheffield ...

\*Amounts collected by spawn merchants are not for publication. †Previous contributions already acknowledged.



# GRAIN SPAWN

PRODUCES

TOP QUALITY MUSHROOMS

that travel well to distant markets

Exhibits Grown from this Spawn after Travelling OVER 450 MILES gained

TWO CUPS and FOUR PRIZES at the 1958 Bournemouth Exhibition

Write our Technical Director ROBERT PATTERSON, B.Sc., B.Ag. (Hons.)

Monlough Food Production Co. Ltd.
BALLYCOWAN - BELFAST

'Phone : Carryduff 243 'Grams · "Monlough, Belfast"

# BOURNEMOUTH EXHIBITION AND CONFERENCE

In spite of the limitations of the Public Rooms at the Town Hall, Bourne-mouth, the Mushroom Industry Exhibition and Conference, held there on 1st and 2nd October, went off without any serious hitch and this event was once again well supported by the growers and the trade in general.



The visit of Dr. Leon Kneebone of Pennsylvania State University attracted considerable interest and the limited capacity of the lecture room was strained to the absolute limit for Dr. Kneebone's lecture on the afternoon of the opening day whilst the attendance was only slightly less for the lecture of Mr. Fred. C. Atkins on the second day. It was felt that 150 people would be the greatest number which could possibly crowd into the room but, nevertheless, nearly 180 eventually managed to squeeze in.

Dr. Kneebone's excellent lecture (see p. 424), illustrated by lantern slides, was first-class in its content and Dr. Kneebone himself proved a most able lecturer with a thoroughly engaging manner. Even later in the evening at The Grand Hotel, when the lantern slides had become somewhat out of order, Dr. Kneebone, who had been unable to complete the lecture at the Town Hall in the available time, carried on without the slightest trouble.

Equally, the lecture by Mr. Atkins on the second day was very well received and gave growers in this country a valuable insight into what is going on in America and the vast scale of some of the mushroom plants in that country with their high level of mechanisation.

Both lecturers thoroughly deserved the warm thanks of appreciation which were voiced by Mr. R. Groom of Dublin, and Mr. Raymond Thompson of Chichester. They had been introduced by the MGA Chairman, Mr. Bleazard, who, with Mr. Atkins and Mr. Dumbreck, attended this year's American Short Course.

Attending both lectures was a party of Dutch growers led by Dr. Pieter Bels, who is in charge of mushroom research in that country. The party also included German and Belgian growers.

At the conclusion of the lecture by Mr. Atkins on the second day Dr. Bels gave details of the new research station being built in Holland and lantern slides depicting the building progress were shown.

Dr. Bels also presented boxes of cigars to the MGA Chairman and the Secretary.

The cocktail party at The Grand Hotel was well attended with the Mayor of Bournemouth and the Mayoress as the chief guests accompanied by the Town Clerk, Mr. Lindsay Clegg, and Mrs. Clegg. The Mayor made a short speech of welcome to the members and was thanked by Mr. Bleazard. Afterwards the Mayor presented the Window Dressing and Mushroom Competition awards.



Later in the evening the MGA special meeting was presided over by the MGA Chairman and among the questions raised was that of the probable shortage of straw early next year. The view was exThe view was

would be accute, that straw would be exceedingly dear and would inevitably be of poor quality. Some questions were asked on Publicity with Dr. R. L. Edwards suggesting that the collection of the spawn contributions still needed tightening up considerably. He was of the opinion, as were others, that a number of growers who had agreed to contribute were not in fact doing so. He urged another approach to the spawn merchants.

The eve of the conference "get together" proved as popular as ever with a splendid gathering at The Grand Hotel.

Among the criticisms was that concerning the absence of any direction signs in Bournemouth. Another suggestion for the future was that lectures should not commence until 4 p.m. on any day. If you have any criticism and suggestions The Editor will be pleased to have them and to publish, if suitable.

The general arrangements in connection with the Exhibition and Conference were made by Mr. Baker and the Exhibition Sub Committee.

Said Mr. Baker afterwards "We are all most grateful to those growers who co-operated so readily in the matter of mushroom supplies".

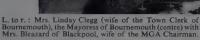
# BOURNEMOUTH PICTURES



Mr. and Mrs. F. Patterson receiving one of the cups won by the Monlough Food Production Co. Ltd., Ballygowan, Belfast.



The Mayor of Bournemouth talking with Dr. Leon Kneebone from Pennsylvania.





L. to r.: MGA Chairman, Mr. F. Bleazard with the Mayor of Bournemouth, the Mayor of a Dutch village and Dr. Pieter Bels in charge of Dutch mushroom research.



The Mushroom Competition Judges, Mr. F. C. Hardy (r.) of Bournemouth and Mr. C. P. Chamberlain (l.) who has judged several times before.

## BOURNEMOUTH PUBLICITY AND COMPETITIONS

To stimulate the demand for mushrooms in Bournemouth at the time of the Exhibition and Conference the MGA offered substantial money prizes in a window dressing competition.

Entries for the competition were somewhat disappointing but the sale of mushrooms received a substantial boost and the extent to which this increased demand holds is awaited with much interest by the Publicity Committee.

During this limited campaign some thousands of recipe leaflets were distributed and strip "M-M-M-Mushroom" posters and "Mushroom Week" posters were also supplied for distribution which was arranged by three wholesale concerns in Bournemouth, all of whom co-operated in an arrangement whereby the grower received 3/9d. per lb. and the retailer was charged 4/- per lb. to sell at 5/-.

As extracts from letters reproduced below show, sales substantially increased by as much as 150%, with one shop reaching a 300% increase. A week after the effort sales were running 50% above the average with prices back to normal. The Southern Gas Board at Bournemouth also co-operated by specially featuring mushrooms at their cookery demonstration. Mr. William Wallace, President of the local branch of the Retail Fruit Federation made the arrangements and the judging was carried out in the first place by members of the local Townswomen's Guild, with the finalists judged by an MGA panel consisting of Mrs. Bleazard, Mrs. Lawrence and Mrs. Allen.

Winners were:—Ist (£15), Messrs. Wilmots, 443 Poole Road, Branksome; 2nd (£10), W. Wallace, 10 Queen's Road, Bournemouth; 3rd (£5), H. Fielder, 469 Poole Road, Branksome; 4th (£2), W. Lawes, 367 Holdenhurst Road. Bournemouth.

They write . . . . .

Messrs. Wilmots: "You will be pleased to know that during the week of the Window Display our mushroom sales increased by approximately 300% and this past week (11th October) sales have increased by approximately 50% over normal sales".

H. H. Fielder, Esq.:-"... during the Convention Week my sales

increased by 125%".

W. E. Lawes, Esq.:—"I am pleased to tell you the publicity certainly made an increase in sales. During 'Mushroom Week' our sales were up 150%. Maybe some of this was due to the cheaper price ticket but anyway, to date, our sales have kept up to about 50% higher than before".

Bournemouth Exhibition

## MUSHROOM COMPETITIONS

Who said bad travellers?

In spite of the fact that the exhibits had travelled about 450 miles, mushrooms entered by the Monlough Food Production Co. Ltd., of

Ballygowan, Belfast, were awarded two cups and four cash prizes at the Exhibition.

Much interest centred around the entries of the Broadham Produce Co. Ltd., from Oxted, who, in the last five years have achieved outstanding success in these mushroom competitions. It was expected too that Mr. G. C. Smith of Loddington Farms, Maidstone, would also again be well to the fore.

As it happened the main challenge to Broadham came from Northern Ireland and the success achieved by Monlough gave general satisfaction, but Broadham, with their three trophies still held a slight edge. Another popular success was that of Mr. G. V. Allen of Bilting, winner of the Smart Cup and also that of Mr. G. R. D. Newell of Westrow Mushroom Farm Ltd., Amersham, Bucks., who, like Mr. Allen, gained a most attractive replica with his cup.

Entries numbering eighty in all, showed a slight drop on last year but without question the standard of quality and that of display set a new high level. The judges were Mr. C. P. Chamberlain of Trowbridge, formerly a grower of many years standing, who was assisted by Mr. F. C. Hardy, a well-known fruiterer and greengrocer at Bournemouth.

Mrs. Bleazard, Mrs. Jones, Mrs. Baker, Mrs. Allen, Mrs. Field and Miss S. Baker made the display arrangements.

#### Results:-

MGA Challenge Cup (Presented by Harding Bros., Tenterden)—White Buttons: 1. Monlough Food Production Co. Ltd., Ballygowan, Belfast; 2. Broadham Produce Co. Ltd., Oxted, Surrey; 3. Sampson Mushrooms Ltd., Oving, Chichester.

Mount Cup (Messrs. Mount & Son, Canterbury)—White Buttons:
1. Monlough Food Production Co. Ltd.; 2. Broadham Produce Co. Ltd.; 3. Major A. L. A. Dredge, Combe Bank Market Gardens, Sundridge, Kent.

**Broome & Green Cup** (Presented by Messrs. Broome & Green, Covent Garden)—White Cups: 1. Broadham Produce Co. Ltd.; 2. G. V. Allen, Bilting; 3. Major A. L. A. Dredge.

Smart Cup (Presented by Messrs. Pask, Cornish & Smart, Covent Garden)—White Opens: 1. G. V. Allen; 2. Major A. L. A. Dredge; 3. Broadham Produce Co. Ltd.

Thwaites Cup (Presented by the late John Thwaites, Esq.)—White Buttons and Cups: 1. Broadham Produce Co. Ltd.; 2. Monlough Food Production Co. Ltd.; 3. G. C. Smith, Loddington Farms, Maidstone, Kent.

Stable Manures Cup (Presented by Messrs. Stable Manures Ltd., Newmarket and Worthing)—White Cups and open to growers with under 10,000 sq. ft.: 1. G. R. D. Newell, Westrow Mushroom Farm, Ltd., Amersham, Bucks.

T. J. Poupart Cup (Presented by Messrs. T. J. Poupart, Ltd., Covent Garden)—White Buttons, Cups and Opens, as packed for market:

1. Broadham Produce Co. Ltd.; 2. Monlough Food Production Co. Ltd.; 3. G. C. Smith.

#### TRADE DISPLAY

#### New Machine Attracts Much Interest

The measure of support which the Trade in general accords the Mushroom Industry Exhibition is a source of considerable comfort to the organisers and the Association as a whole and the Bournemouth Exhibition again proved the solidness of this support.

Whilst it is true that some firms feel that an Exhibition, every second year, would be ideal others feel equally strongly that the Exhibition should firmly entrench itself as an annual affair.

Without question a new spawning machine shown by Messrs. S. A. F. Sampson Ltd., of Oving, Chichester, was the centre of early attraction. It had been known to some people that such a machine had been on trial in England at one or two farms for some time but, for the great majority of growers this was the first opportunity to see it.

The spawn and general sundries firms were again in strong evidence and were represented by W. Darlington & Sons, Southcourt Road, Worthing; Geo. Monro Ltd., Waltham Cross; S. A. F. Sampson Ltd., Oving: and J. E. R. Simons Ltd., Natts Farm, Harlow, Essex. The world of chip baskets and mushrooms have long been strongly allied and basket making firms represented included The Atlas Basket Co. Ltd., Harpenden, Herts.; Arthur Coomer Ltd., Farlington, Portsmouth and F. Gough & Son Ltd., Fishergate, Norwich. Representing the prepack challenge were The Hartmann Fibre Co. Ltd., of City Walls House, Finsbury Square, E.C.2, with a particularly enterprising effort. On the activator front were the Bradford Fertilizer Co. Ltd., Girlington, Bradford and Shirley Organics of Vicarage Wharf, Battersea, S.W.11, whilst Thomas Elliott Ltd., of 120 New Church Road, London, S.E.5, sundries including activators, peat, horse manure, etc., had their usual display. The manure side was also supported by D. C. Bushell & Co. Ltd., Camberley, Surrey, and Stable Manures Ltd., of Durrington, Worthing and Newmarket.

Other old friends including Eclipse Peat Co. Ltd., of Ashcott, Somerset, were present and, in the machinery section where the support was a little disappointing H. D. Steele & Son Ltd., of Worthing showed their new composter together with a fork lift truck, etc.

Newcomers were the Maywick Appliances Ltd., of Wickford, Essex, with their calor gas sterilizing and heating outfit, first shown at Southport. Another newcomer was Armalines Ltd., rubber band merchants of Hemel Hempstead, Herts. The NFU Mutual Insurance Society Ltd., Stratford-on-Avon, were also represented for the first time.

A few old friends were absent including the Murphy Chemical Co., who were prevented from showing by the changed date of a full staff annual conference after first booking space.

# You can make better compost more quickly and reliably-with ADCO 'M'

SPECIAL MUSHROOM COMPOST ACTIVATOR GIVES
HIGHER FERMENTATION TEMPERATURES, AND A FIRST
CLASS COMPOST THAT ASSISTS THE SPAWN RUN

MANY ADVANTAGES are gained by using Adco "M" as an activator in composting. Chief among them is the higher temperature attained both in the compost heap and in the beds during the peak heating process. Look at the results that follow from these higher temperatures.

First of all, fermentation goes ahead at a faster rate. Composting takes less time and the finished product is ready

Secondly, you have greater assurance that your crop will be free of pests and disease. The higher temperature either kills off the pests inside the heap or drives them to the surface, where they can be dealt with by insecticides. High temperatures during fermentation are particularly vital in preventing disease such as Vert-de-gris, of which there is special danger when composting during the winter months.

#### More nourishment

If you use Racing Stable manure, or other manure in which excess straw is present, the use of Adco "M" is strongly advised. The fermentation of this type of manure takes place more rapidly and effectively when Adco "M" is added. You get a more thorough breakdown of the strawy material, which then becomes available as food for the growing spawn. So your compost provides more nourishment for the mushrooms, and you get a bigger crop.

#### Better spawn run

Adco "M" produces a good quality compost of even texture. It provides an

ideal medium for spawn run and helps to avoid greasy conditions, lack of aeration, and over wet compost – all of which delay mycelium growth. The spawn is able to make more rapid use of the food provided. It establishes itself more quickly and this is again a great help in preventing diseases and weed fungi. The faster the spawn grows and fills the compost the less likelihood is there of disease and weed fungi becoming serious competitors. A quick spawn growth also gives a quicker ultimate production.

You can have freedom from uncertainty in the composting process – by using Adco "M". It will pay you hands down. Adco "M" is specially formulated as a result of years of experiment, for the specific purpose of making mushroom compost. It can be used for composting with straw alone, if you wish. Or it can be used to compensate for variations in the quality and texture of your manure supply. Adco "M" provides the way to better mushroom compost every time.

— Post this coupon for full details —

Adco Limited, Harpenden, Herts
Please send me your leaflet giving full
details of Adco "M".

NAME

ADDRESS

#### WORLD'S PRESS DIGEST

Mushrooms are quite a good trade again (*Grower*, August 30/58). There are lighter supplies of mushrooms that cleared very well (*Nurseryman Seedsman*, September 9/58). Mushrooms fell victims to the high humidity; a shortage was created and prices were firm (*Grower*, September 13/58). Mushrooms, although in good condition and not heavy in quantity, are hard to move (*Fruit Trades' Journal*, September 20/58). Mushrooms enjoyed an improved trade (*Commercial Grower*, September 26/58).

Hopes of political help have been raised in the past and have faded away. This time there seems to be a realistic and determined spirit. We do not expect that Mr. John Hare, the Minister of Agriculture, will have a vast amount of cash to direct in our direction; but we believe he can lay his hands on some, and that his intentions are good. The probability is that he will announce his plans in November.

Grower. September 6/58.

Wild mushrooms could easily receive spray drift from commercially sprayed row crops, cereals and fruit. These, sold either at roadside stalls or even in shops, could be consumed many miles from their source, while quite heavily contaminated. Trouble of this sort is not within the immediate scope of the MGA, although it could have most unfortunate repercussions on a body which can in no way control the sale of wild mushrooms.

Martin D. Austin in Commercial Grower, September 5/58.

For our part, we believe that the processor is going to play a greater part in our lives (and bank balances, if any) as each year goes by. The threat of the processor turning to cheap imports is ominous.

\*\*Grower\*\*, September 13/58.\*\*

An odd thing about the country is that on up-to-date farms there simply isn't anyone around at all. If you are fortunate enough to spy anybody, he will be painting or building or whizzing heavy ironmongery round hairpin corners, just as though you were in Knightsbridge.

Siriol Hugh-Jones in Sunday Times, August 24/58.

Albert E. Reed & Co. Ltd., the £50-million paper and packaging group, have acquired R. H. Filmer Ltd., a private company making folding boxes.

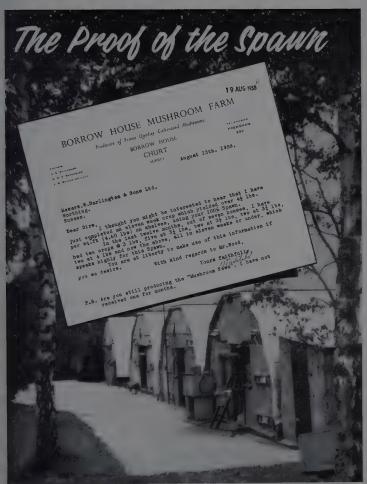
Packaging News, September/58.

If a campaign could be started extolling the virtues of mushrooms as a slimming food when substituted for chips, mushroom growers would find the demand overtaking the supply.

M. Davidson in Commercial Grower, September 12/58.

A grower on one very old-established Sussex tomato nursery is firmly convinced that the liberal use of spent mushroom bed compost is the mean of maintaining a better soil texture, that it aids the proper soil ventilation and warming, and makes for more vigorous root run.

M.D. In Nurseryman Seedsman, September 11/58.



# is in the cropping!

### W. DARLINGTON & SONS LTD

ESTABLISHED 1860

WORTHING SUSSEX

The Francis brothers—F.S. and G.W.—of Mid-Kent Nurseries, Hadlow, Kent, regard the distribution of mushrooms as one of the most important problems the industry has to face. They believe trade could be expanded considerably in the smaller town and villages if a way of getting fresh mushrooms to places could be found.

Ronald Webber in a page article in Grower, September 20/58.

Soil heating by electricity has given cheaper nematode control in glasshouses than steaming. When wire netting at a depth of 10-17 cm. had raised the temperature of the top soil to 55-56° C., nematodes were killed.

J. Brande and A. Gillard in Tuinbouwber (Flemish), 21, 1957.

Everything which can be classed as agricultural equipment is included among goods released from hire-purchase control by the Board of Trade this week. *Commercial Grower*, September 19/58.

Yields of mushrooms in experiments in the Soviet Union in kg. per sq. m. were 11.4 from a 1:1 mixture of cattle manure and sawdust; 8.8 from a 3:7 mixture of horse manure and sawdust; 7.5 from a 1:3 mixture of horse manure and potato haulms with added ammonium sulphate and gypsum each at 1 kg. per cu. m., 6.7 from cattle manure with 50% straw; and 4.8 from urban refuse covered with 5 cm. of horse manure.

T. Rautavaara in Puutarha 61, 10, 1958.

Mushroom growing in the Coleraine area is described in four pages by D. T. McAlister.

Report of Ministry of Agriculture, Belfast 32, 1958.

Grants for oil conversion, it will be recalled, were discontinued at the time of the Suez crisis. Now, the NFU reports, loans are available under the Government Loan Scheme where any conversions to solid fuel of a smaller grade are intended. The question of loans for oil conversion remains, however, unchanged.

Nurseryman Seedsman, September 25/58.

The constricting ring mechanism of two predacious hyphomycetes, Arthrobotrys dactyloides and Dactylella doedycoides is described in 22 pages with particular reference to changes in the cell wall, osmotic potential and volume of the cells.

H. G. Muller in Transactions of the British Mycological Society, September 158.

It may well be that the time has arrived for serious consideration to be given to a separate wages structure for horticulture. The situation demands attention.

Nurseryman Seedsman, September 4/58.

Cold-applied by brush to the roof surface, Bituproof 783 gritting emulsion precipitates the bitumen on contact with the gritting chips to give an immediate protective and adhesive coating unaffected by rain immediately after application. The elimination of pre-heating avoids delays, and the emulsion can be used in bad weather.

Scope, October /58.

# The CULVERWELL

# Manure Jurner FOR



Bruises and aerates-does not shred. CAN BE USED FOR ALL TURNINGS. 3 men handle 25/50 tons per day. Waters as it turns. Stacks up to 5 feet. By using the CULVERWELL MANURE TURNER throughout the whole composting process, the work is reduced to the minimum, time taken is shorter with improved results.

Will pass through a door 2'  $10^{\circ} \times 5'$   $10^{\circ}$  with the detachable wheels removed

E.O. CULVERWELL Ltd.

MALLING WORKS LEWES - SUSSEX LEWES 637
(8 LINES)

Easily-applied covering of flexible foamed plastic, suitable for insulating hot or cold pipes has been developed by the Armstrong Cork Co. Ltd. Known as Armaflex, the material has a thermal conductivity of 0-28 B.Th.U's at 75° mean temperature. It varies in price from 1s. 1d. to 5s. 9d. per linear ft. and if required can be supplied ready split for erection.

Scope, October/58.

A method of insulating existing buildings from the outside, developed by The Universal Asbestos Manufacturing Co. Ltd., is intended particularly for buildings with sheeted roofs. Known as the Exterior Sandwich System, it gives a thermal transmittance value better than 0.2.

Scane. October 158.

Suitable for 10 cwt. loading, an electric battery pallet truck introduced by Wessex Industries (Poole) Ltd. has a manual or power operated hydraulic pump and can be used in confined spaces. Pallet forks are available in alternate lengths and widths.

Scope, October /58.

A National College of Food Technology to be erected at Weybridge, Surrey, will cost about £350,000. It will have up-to-date plant modified for instruction on food processes such as quick freezing, dehydration and canning.

\*\*Daily Telegraph\*\*, September 5/58.\*\*

A large number of growers are using cement mixers for making up the casing.

East Anglian correspondent, Nurseryman Seedsman, September 4/58.

A. G. Linfield (Canners & Growers) Ltd. announce that strong promotion support is to be given to their five varieties of canned mushrooms. Large spaces have been booked in selected women's magazines. Display material includes an attractive multi-coloured "3D" showcard for window and counter, and replicas of the Chesswood gnome on a mushroom as crowners for individual cans.

Fruit Trades' Journal, August 23/58.

At the College of Agriculture, University of Tokyo, the author investigated a strain of *Bacillus circulans*, isolated from soil, which lysed *Aspergillus oryzae:* when inoculated into a flask culture of the fungus in Czapek-Dox medium, which had been shaken for 24 hours at 30° C., the bacterium brought about the almost complete disappearance of mycelium after a further 80 hr. shaking at this temperature. Study indicated that it acted directly on the cell wall.

K. Horikoshi & S. lida in Nature 181, 4613, 1958

In view of the difficulty of saturating dry peat, it helps considerably in practice to contain the broken up bales within a compound of low walls of loose bricks or stone blocks. When an open hose is turned on the peat, surplus water escapes between the cracks in the surrounding walls and, by stirring the peat with a fork while applying the water, saturation is easily and conveniently achieved. At this stage the chalk is dumped on top of the peat and the weight squeezes out surplus water. Three bales of peat and  $1\frac{1}{2}$  tons of chalk will produce sufficient casing medium for about 1,000 sq. ft. of bed area.

F. W. Allerton in Nurseryman Seedsman, August 28/58.

# MOUNT SPAWN



The Grower of this crop says-

The first flush yielded .96 lbs. per sq. ft., all picked within three days, and the second .57 lbs. per sq. ft. The total of the two flushes was picked within tourteen days and the yield was 1.53 lbs. per sq. ft.

We use only synthetic composts here and these are prepared from wheat straw, activated with a MRA formula which you supply. The composting is done with the aid of a Hawkomatic Compost Maker, and with this machine we are able to control exactly the amount of water introduced and also to ensure a very even spread of activator on the straw. We believe both factors to be of great importance in the preparation of the compost.

We grow on shelf beds and have so far used Mount Spawn in all our crops but one. Another example of a recent good crop was 2.75 lbs. per sq. ft. in ten weeks.

Extract of recent letter received.

SOLE DISTRIBUTORS:

J. E. R. SIMONS LTD.

Telephone: Potter Street 65, 222, and 223

#### CORRESPONDENCE

I was unfortunately unable to attend Dr. Kneebone's lecture at Bournemouth but the reports in various Trade Journals have interested me greatly, particularly his advice about ventilation.

I think it would be as well to realise that there is nothing new in this. When I first joined Messrs. W. Darlington & Sons Ltd., some seven years ago, Mr. F. C. Wood was then advocating the need for thorough ventilation and, in fact, was the first person to advise the use of circulating fans inside mushroom houses. I well remember him saying to me "I believe it could be that there is enough air in a mushroom house to support a crop even though that house were hermetically sealed, provided that the air was constantly in motion".

I notice also that Mr. Atkins intends to "concentrate more on the air in our mushroom houses". Surely he, of all people, should be conversant with the trends of thought in his own country.

There are many growers in this country who have been benefitting for the last seven years or more by "concentrating more on the air in their mushroom houses" on the advice of Mr. Wood.

Credit should be given where credit is due.

John H. Scrimgeour, (Lytchett Matravers, Dorset)

Had Scrimgeour been at Bournemouth he would not have written this letter which, in any event, is an uncalled-for discourtesy to a guest whose visit provided stimulation and pleasure to all who met him and heard his quite remarkable lecture.

#### 999

At the recent International Congress of Microbiology at Stockholm, I was assured by three separate small groups of American microbiologists that from one coast of America to the other the same strain of cultivated mushroom is sold, and that it is both tasteless and uninteresting. I was further told that American soup manufacturers have found it so unsatisfactory that they are financing experiments to develop other strains and species of *Psalliota* as well as what we here call toadstools, in submerged culture, so as to be able to add something with flavour to their products.

Perhaps I should add that the information was not the result of any questioning on my part: in only one instance had it any connexion with my "interest" in mushroom growing.

J. RAMSBOTTOM.

#### 

For your diary: The next American Short Course on Mushroom Growing will be held at Pennsylvania State University, 22nd—25th June, 1959.

The 4th Conference on the Scientific Aspects of Mushroom Growing takes place at Copenhagen, 18—25th July, 1959.



As part of the Publicity Campaign the MGA, borrowing an idea from the American Mushroom Industry, is to distribute the aprons depicted on the left—the picture is of Miss Chelia Zazzi (sav Zat-zee) Assistant MGA Secretary—to women journalists. In America some excellent publicity has been obtained by this method and good results are hoped for in this country. The aprons are in blue. Members may feel, with the approach of Christmas, that gifts of this kind might well be acceptable to their friends and these aprons, can be obtained from the MGA Office, at 15/6d. each.

# What is the most quoted paper?

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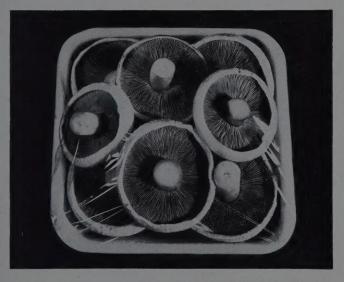
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